Abstract

Blood flukes of the genus *Schistosoma* are parasitic trematodes that cause schistosomiasis, a serious disease afflicting more than 240 million people. The proteolytic system of schistosomes is essential for their viability: it participates in important processes during host-parasite interactions such as food digestion, invasion and tissue migration. Thus, schistosomal proteases are promising molecular targets for therapeutic intervention in schistosomiasis treatment. The thesis focuses on the protease cathepsin B2 from *S. mansoni* (SmCB2) which has not been studied in detail so far in terms of biochemical properties and biological function. Recombinant SmCB2 was prepared using yeast and bacterial expression systems and was chromatographically purified. Using an *in vitro* activity assay, the first effective inhibitors of SmCB2 were identified which inhibited its proteolytic activity in submicromolar concentrations. Specific polyclonal antibodies against SmCB2 were prepared and used for immunomicroscopic localization of this protease on the surface of the parasite. ELISA analysis demonstrated that SmCB2 is a parasite antigen recognized by the host immune system in the mouse model of schistosomiasis. The thesis provides valuable information about SmCB2 as a potential target molecule for synthetic inhibitors and a new antigen for vaccination studies.